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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/481,988	01/11/2000	PAUL J. BRUINSMA	1941-70	6422

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EXAMINER

MARCANTONI, PAUL D

ART UNIT PAPER NUMBER

1755

DATE MAILED: 11/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/481,988

Applicant(s)

Bruinsma et al.

Examiner

Paul Marcantoni

Group Art Unit

1755

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 9/9/02 Appeal Brief
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-27, 40, 41, 58-60, 69-71, 78-88, 90-95, 98, 109-115, 116-121, + 122-128 is/are pending in the application.
- ☐ Of the above claim(s) _____ is/are withdrawn from consideration.
- ☒ Claim(s) 1-27, 40, 41, 58-60, 69-71, 78-88, 90-95, 98, + 109-115 is/are allowed.
- ☒ Claim(s) 116-128 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____.
 - ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of References Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

The finality of this office action is withdrawn in favor of the following new grounds of rejection:

Enablement Issues 35 USC 112 First Paragraph (Claims 116-127):

Claims 116-127 remain rejected under the first paragraph of 35 USC 112 and 35 USC 132 as the specification as originally filed is not commensurate in scope with applicants' enabling disclosure.

The applicants omit the use of an acid (catalyst) in claim 116 which would appear to be required for their invention. It would appear that HCl is an acid catalyst and it is used in all examples so it would appear to be a critical component in their method. This omission of an acid catalyst in claim 116 would appear to be render applicants' claimed process non-enabling absent a showing from the original disclosure that its usage is not mandatory.

Claim 117 also omits the use of an acid catalyst which would appear to be a critical component in their claimed method and thus its omission is non-enabling.

The term "surfactant" alone renders claim 118 non-enabling because applicants have support only for ammonium cationic surfactants or an *alkyl triethylammonium* chloride or bromide surfactants with different chain lengths.

Claim 118 also omits the use of an acid catalyst which would appear to be a critical component in their claimed method and thus its omission would make applicants' claimed process non-enabling.

Claim 119 would appear to be non-enabling with respect to the originally disclosed invention. The term "a surfactant" is non-enabling. Applicants only have

Art Unit: 1755

support in their original disclosure and thus claimed process for ammonium cationic surfactants or an *alkyl triethylammonium* chloride or bromide surfactants with different chain lengths.

Claim 119 also omits the use of an acid catalyst which would appear to be a critical component in their claimed method and thus its omission would make the claimed process non-enabling with respect to the original disclosure.

Claims 120 and 121 are rejected because both claims would appear to omit the use of both a surfactant (specifically, ammonium cationic surfactants or an *alkyl triethylammonium* chloride or bromide surfactants with different chain lengths) and an acid catalyst which are both critical components of their inventive process. Omission of these components would appear to make these claims non-enabling with respect to the originally disclose invention.

Claims 122-127 are rejected because they refer to claims that are non-enabling. The limitation of the aqueous solvent is supported by the original disclosure (see original patent Bruisma claim 1). Yet, the problem is that these claims depend upon claims that are not commensurate with an enabling disclosure.

Claim 128:

New Matter (Claim 128 only):

Claim 128 remains rejected under the first paragraph of 35 USC 112 and 35 USC 132 as the specification as originally filed does not provide support for the invention as

is now claimed. Also, the invention is rejected under 35 USC 112 as the specification as originally filed is not commensurate in scope with the now claimed invention.

The applicants newly added limitation of between about 105 degrees C and 600 degrees C to decompose the surfactant and calcine the mesoporous silica film would appear to be new matter not supported by the original disclosure. The applicants do not have support for "between about" 105 degrees C nor do they have support for "about" 600 degrees C. The applicants would appear to have support for a two step heating process at 105C for drying followed by calcining from 350C to 600C for a time sufficient to decompose the surfactant.

Enablement Issues (Claim 128):

Claim 128 is rejected under the first paragraph of 35 USC 112 as the specification as originally filed is not commensurate in scope with an enabling disclosure.

These new temperature range are also not commensurate in scope with the originally filed enabling disclosure because the original disclosure requires a *two step* heating process of heating at 105 C for drying followed by calcining from 350C to 600C for a time sufficient to decompose the surfactant.

The term "catalyst" alone in claim 128 would appear non-enabling with respect the originally filed disclosure. As has been stated previously, applicants do not have support for any other catalyst other than an acid catalyst. The term silica precursor is supported by the originally disclosed invention.

The term "solvent" alone is not enabling with respect to the originally disclosed process because the original solvent must be either an aqueous solvent or a solvent containing an alcohol which can be ethanol (see, for example, original claims 1, 6, and 7 of Bruinsma patent).

These terms "catalyst" and "solvent" alone are not commensurate in scope with the enabling disclosure for originally filed invention because the original disclosure requires an acid catalyst and an aqueous and/or alcohol containing (ie ethanol) solvent .

Applicants' process of claim 128 is also not commensurate in scope with their enabling disclosure because the original disclosure requires the presence of a templating step, an acid catalyst present, an ammonium surfactant or alkyl trimethylammonium chloride or bromide surfactants with different chain lengths, a silica precursor of tetraethoxysilane (TEOS), formation of a perform (of the silica precursor), having a superstoichiometric amount of aqueous solvent, providing acid catalyst in an amount to maintain a hydrolyzed precursor and avoid gelation or precipitation, and providing the surfactant and silica precursor in a mole ratio that is above a lower mole ratio that produces a non-porpus silica phase and below an upper mole ratio that produces a lamellar phase.

It is noted that there is support for a calcined silica film on column 7, line 5 and column 9, line 11. However, claim 128 is non-enabling because the original disclosure requires the presence of an *acid catalyst* which is missing or omitted from claim 128. This must be in claim 128 because it is required by the original disclosure.

Also, claim 128 is non-enabling because it omits any solvent whatsoever not to mention it does not state an *aqueous solvent* which is required by the applicants' invention. The solvent can include dilution with an alcohol, particularly ethanol (see Bruinsma patent original claims 6 and 7). Further, it would appear critical to actually dilute with an alcohol as is required by claim 25 of the original Bruinsma patent.

Claim 128 is further non-enabling with respect to the original disclosure because the original disclosure does not support any surfactant known in the art. Applicants are limited to the teachings of their original disclosure which is a surfactant having an ammonium cation. More so, it also supports using alkyl trimethylammonium chloride or bromide surfactants with different chain lengths (see col.7, lines 40-50 of original Bruinsma patent).

Claim 128 is non-enabling because applicants do not have support for any precursor but are limited to a silica precursor of tetraethoxysilane (TEOS). TEOS is present in all working examples and would appear to be required in any claim for forming a film. No film is formed using any other precursor other than TEOS. (See also original claim 25).

35 USC 112 Second Paragraph:

The applicants newly added range "of between about 105 degrees C and about 600 degrees C" sufficient to decompose the surfactant "and calcine the mesoporous silica film" would appear to be vague and indefinite. It is unclear at what temperature the material is heated before calcining versus the temperature range of calcining as

well as what is being achieved in each step to obtain the final mesoporous silica film product. (see col.11, lines 25-26 of Bruinsma patent).

Claim 128's new temperature limitation step remains indefinite because applicants do not distinguish which temperature range or specific temperature is for heating and which set temperature or temperature range is for calcining. Claim 128 is further vague since it is unclear if it is a two step heating process or only a one step heating process. It would appear that the original disclosure indicates a two-step heating process. Heating and calcining are performed. More so, is it possible to calcine at 105 degrees C? From the new claim limitation, it could be construed that there is no difference between heating and calcining when clearly that is not the case.

Claim 128 would appear indefinite because applicants do not provide a temperature one of ordinary skill in the art would understand to be calcinations or heating (105 C vs. 350C to 600C).

Response:

Also, the applicants' presentation of their film heating steps is vague, indefinite, and also new matter for the reasons stated above. Applicants should have broken claim 128 into two specific heating steps which was requested in the first office action. The claim should have been:

Heating the film on the substrate at a temperature of 105 degrees C for a time period effective to dry the substrate (note:if this is what is necessary in the first lower heating step); and

Calcining the film in the temperature range of 350 degrees C to 600 degrees C for a time sufficient to decompose the surfactant.

These temperature ranges are supported by the original disclosure especially when looking at the examples as well as the teaching of column 11, lines 25-26 of the Bruinsma patent.

The examiner's rejection of all claims 116-128 as non-enabling is now a new presentation and deems all previous arguments to new matter issues moot. However, the examiner has maintained the rejections under 35 USC 112 second paragraph. The applicants would appear to argue that they do not have to claim specific ranges of temperatures for drying and calcining. The examiner disagrees and notes that applicants are limited to the original disclosure for enablement of one of ordinary skill of the art to make or practice their invention with respect to these temperature ranges.

The applicants also argue that using "between" and "about" claim language for the temperature ranges is not indefinite. It is the examiner's position that it is both new matter because there is no literal support for these terms and the original disclosure examples particularly point out and distinctly claim ranges that do not teach "between": and "about".

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Marcantoni whose telephone number is (703)-308-1196. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell can be reached on (703) 308-3823. The fax phone numbers for

Art Unit: 1755

the organization where this application or proceeding is assigned are (703)-872-9310 for regular communications and (703)-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

A handwritten signature in black ink, appearing to read "Paul Marcantoni", with a stylized flourish at the end.

Paul Marcantoni
Primary Examiner
Art Unit 1755